

SERVICE MANUAL

**DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS & BODY**



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION EF

FUEL SYSTEM

EF

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FUEL SYSTEM

AUTOMATIC TEMPERATURE CONTROL AIR CLEANER (A.T.C. AIR CLEANER)

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DESCRIPTION

Air cleaner element

The air cleaner element is of a viscous paper type and does not require any cleaning until replacement.

Note: Do not brush or blast element before replacement.

Automatic temperature control air cleaner

The automatic temperature control air cleaner is provided with a tem-

perature sensor and a vacuum operated valve. The vacuum acted upon the air

control valve is controlled by the sensor. See Figure EF-1

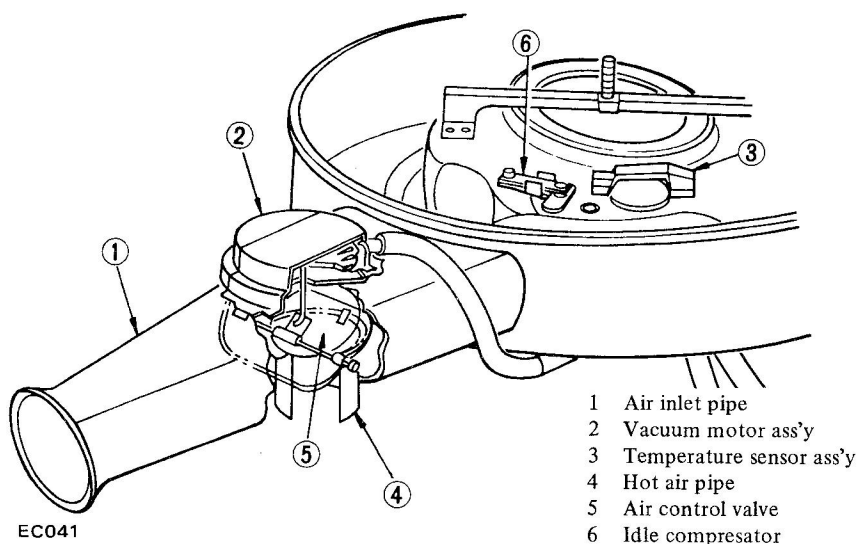


Fig. EF-1 Automatic temperature control air cleaner

If the temperature of suction air is low when the engine is running, the air control valve closes the underhood-air inlet, and introduces hot air through the cover which is installed on the exhaust manifold (See Figure EF-2.).

When the temperature of suction air around the sensor reaches 37.5°C (100°F) or above, the sensor actuates to open the air control valve. When the temperature of suction air around the sensor further rises and reaches above

48°C (118°F), the air control valve completely opens to prevent the entrance of hot air, and allows underhood-air alone to be introduced into the carburetor. (See Figure EF-3.)

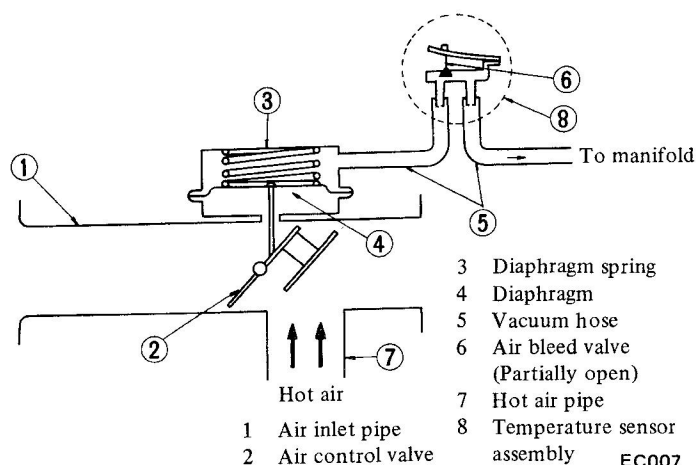


Fig. EF-2 Hot-air delivery mode
(During cold engine operation)

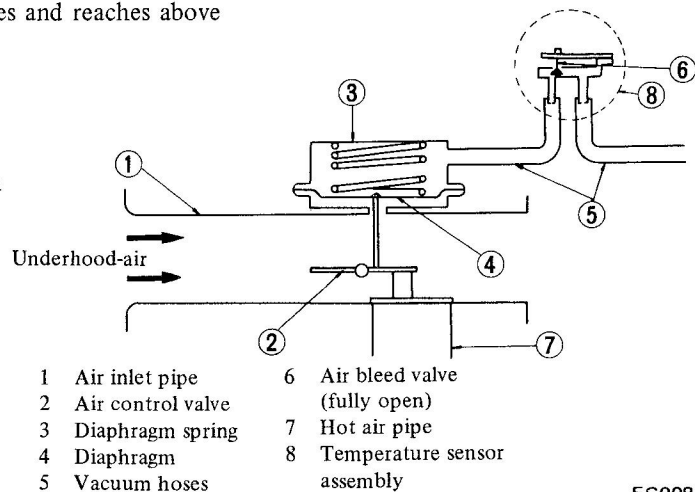


Fig. EF-3 Underhood-air delivery mode
(During hot engine operation)

FUEL SYSTEM

The air control valve acts in the manner described previously, and the temperature of suction air around the

sensor is always kept at about 43°C (110°F). (See Figure EF-4.)

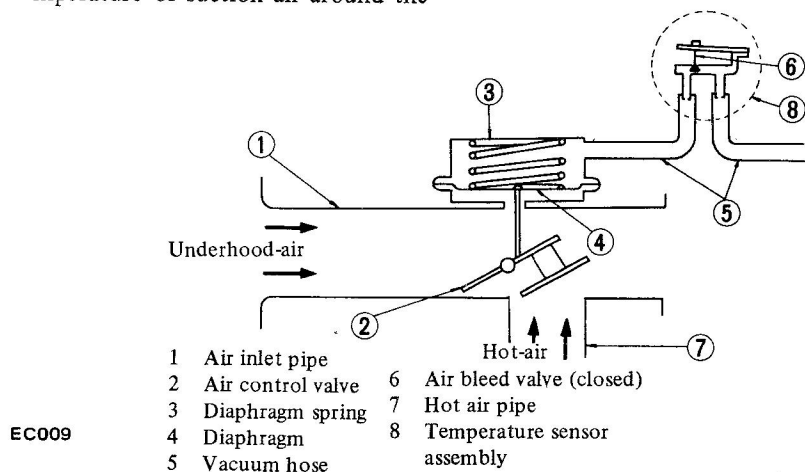


Fig. EF-4 Regulating air delivery mode

When the engine is operating under heavy load, the air control valve fully opens the underhood-air inlet to obtain full power regardless of the temperature around sensor.

This control of carburetor air temperatures allows leaner carburetor calibration with accompanying reduced emissions than conventional controls and also eliminates carburetor icing.

Idle compensator

The idle compensator is essentially a thermostatic valve to compensate for excessive enriching of the mixture as a result of high idle temperatures. When the under-the-hood temperatures are high, the bimetal located in the air cleaner is heated by intake hot air and lifts the valve to open. This permits additional fresh air that is properly calibrated by the 1.4 mm (0.055 in) dia. orifice compensates for the increased richness of into the intake manifold and the air-fuel mixture in order to maintain smooth idle engine operation.

The idle compensator thermostatic valve partially opens at 65°C (149°F) and fully opens at 75°C (167°F).

Never attempt to disassemble this unit since it is sealed for tightness and properly adjusted for valve timing.

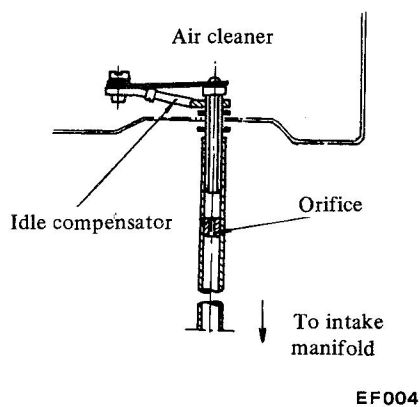


Fig. EF-5 Schematic of idle compensator

TEMPERATURE SENSOR

Removal and installation

Removal

1. Flatten tabs of clip with pliers.
2. Pull off hoses.

Note: Note the respective positions of hoses from which they were removed.

3. Take off sensor and clip.

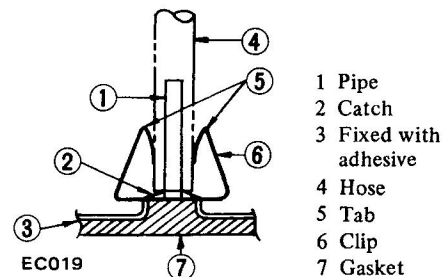


Fig. EF-6 Removal of sensor

Installation of sensor

1. Install sensor and gasket assembly in the proper positions. See Figure EF-7.

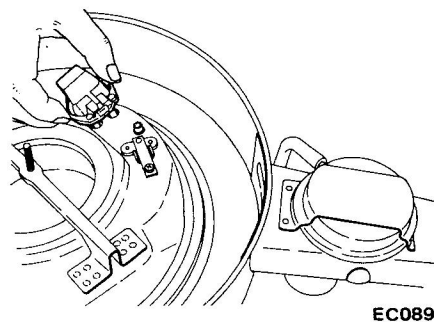


Fig. EF-7 Installing sensor

2. Insert clip. Be sure to hold sensor at its correct position in Figure EF-7 to avoid damage. See Figure EF-8.

Press fit clips into pipe while straightening tabs.

Note: Use care not to damage sensor.

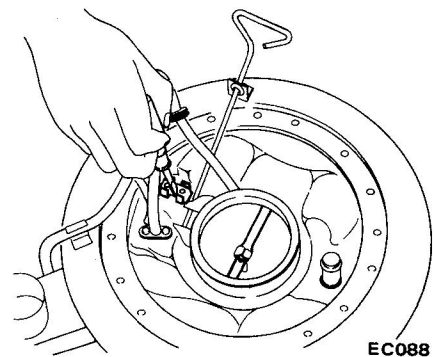


Fig. EF-8 Inserting clip

3. Connect hoses to their proper positions. See Figure EF-9.

FUEL SYSTEM

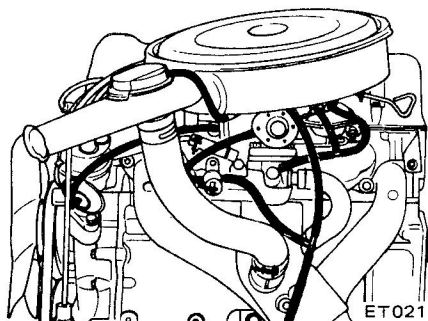
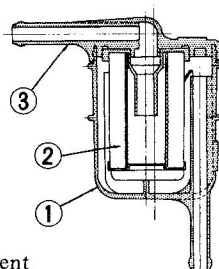


Fig. EF-9 Connecting hoses

FUEL STRAINER

DESCRIPTION

The fuel strainer is of a cartridge type. It uses fiber mat as strainer element which can be checked for condition from the outside.



- 1 Body
- 2 Paper element
- 3 Cover

EF005

Fig. EF-10 Sectional view of cartridge type fuel strainer

REMOVAL

Disconnect inlet and outlet fuel lines from fuel strainer, and remove fuel strainer.

Note: Before disconnecting fuel lines, use a container to receive the remaining fuel in lines.

FUEL PUMP

CONTENTS

DESCRIPTION	EF-4	REMOVAL AND DISASSEMBLY	EF-5
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Capacity test	EF-5		

DESCRIPTION

The fuel pump transfers fuel from the tank to the carburetor in sufficient quantity to meet the engine requirements at any speed or load.

The fuel pump is of a pulsating type designed for easy maintenance. It consists of a body, rocker arm assembly, fuel diaphragm, fuel diaphragm spring, seal inlet- and outlet-

valve. Figure EF-11 shows a cross-sectional view of the pump.

The fuel diaphragm consists of specially treated rubber, which is not affected by gasoline and held in place by two metal discs and a pull rod.

This type of fuel pump is used in the L16 and L18 engines.

FUEL PUMP TESTING

A fuel pump is operating properly when its pressure is within specifications and its capacity is equal to the engine's requirements at all speeds. Pressure and capacity must be determined by two tests, while the pump is still mounted on the engine. Be sure there is fuel in the tank when carrying out the tests.

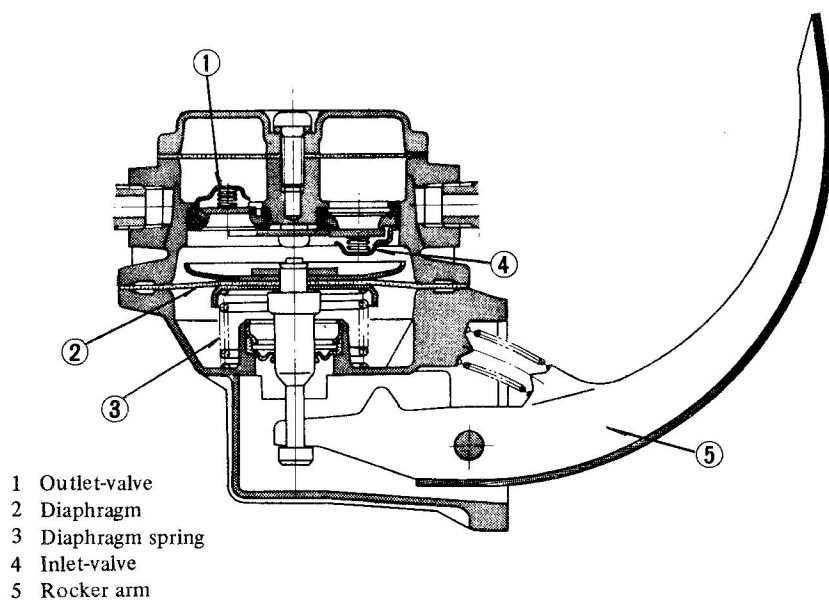


Fig. EF-11 Schematic view of fuel pump

Static pressure test

The static pressure test should be conducted as follows:

1. Disconnect fuel line between carburetor and fuel pump.
2. Connect a rubber hose to each open end of a T-connector, and connect this connector-hose assembly between carburetor and fuel pump.

Note: Locate this T-connector as close to carburetor as possible.

3. Connect a suitable pressure gauge to the opening of T-connector, and fasten the hose between carburetor and T-connector with a clip securely.
4. Start and run the engine at varying speeds.
5. The pressure gauge indicates static fuel pressure in the line. The gauge reading should be within the following range.

0.18 to 0.24 kg/cm²
(2.56 to 3.41 lb/in²)

Note: If the fuel in the carburetor float chamber has run out and engine has stopped, remove clip and pour fuel into carburetor. Fasten clip securely and repeat static pressure test.

Pressure below the lower limit indicates extreme wear on one part or a small amount of wear on each working part. It also indicates ruptured diaphragm; worn, warped, dirty or gumming valves and seats, or a weak diaphragm return spring. Pressure above the upper limit indicates an excessively strong tension of diaphragm return spring or a diaphragm that is too tight. Both of these conditions require the removal of pump assembly for replacement or repair.

Capacity test

The capacity test is conducted only when static pressure is within the specification. To conduct this test, proceed as follows:

1. Disconnect pressure gauge from T-connector and, in its vacant place, install a suitable container as a fuel sump.
2. Start engine and run at 1,000 rpm.
3. The pump should deliver 1,000 cc (2.11 U.S. pts.) of fuel in one minute or less.

If little or no fuel flows from the open end of pipe, it is an indication that fuel line is clogged or pump is malfunctioning.

REMOVAL AND DISASSEMBLY

Remove fuel pump assembly by unscrewing two mounting nuts and disassemble in the following order.

1. Separate upper body and lower body by unscrewing body set screws.
2. Take off cap and cap gasket by removing cap screws.
3. Unscrew elbow and connector.
4. Take off valve retainer by unscrewing two valve retainer screws and two valves are easily removed.
5. To remove diaphragm, press down its center against spring force. With diaphragm pressed down, tilt it until the end of pull rod touches the inner wall of body. Then, release the diaphragm to unhook push rod. Use care during this operation not to damage diaphragm or oil seal.

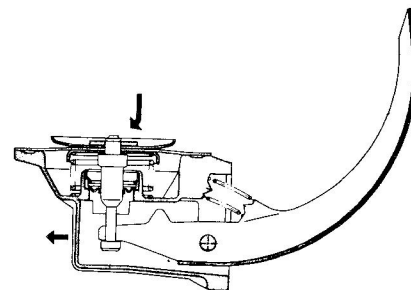


Fig. EF-12 Removing pull rod

6. Drive out rocker arm pin by using a press or hammer.

FUEL SYSTEM

INSPECTION

1. Check upper body and lower body for cracks.
2. Check valve assembly for wear on valve and valve spring. Blow valve assembly with breath to examine its function.
3. Check diaphragm for small holes, cracks or wear.
4. Check rocker arm for wear at the portion in contact with camshaft.
5. Check rocker arm pin for wear. A worn pin may cause oil leakage.
6. Check all other components for any abnormalities and replace with new parts if necessary.

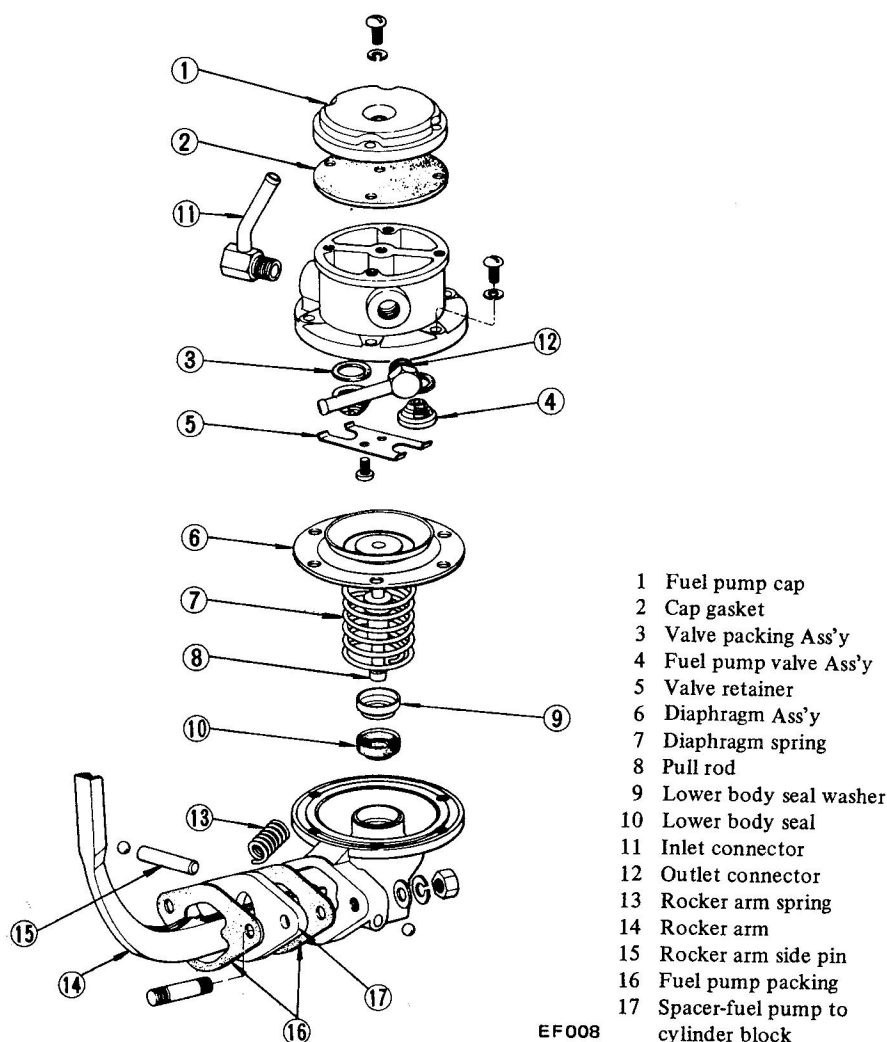
ASSEMBLY

Reverse the order of disassembly. Closely observe the following instructions.

1. Use new gaskets.
2. Lubricate rocker arm, rocker arm link and rocker arm pin before installation.
3. To test the function, proceed as follows:

Position fuel pump assembly about 1 meter (3.3 ft) above fuel level of fuel strainer and connect a pipe from strainer to fuel pump.

Operate rocker arm by hand. If fuel is drawn up soon after rocker arm is released, fuel pump is functioning properly.



EF008

Fig. EF-13 Structure of fuel pump

FUEL SYSTEM

CARBURETOR

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Anti-dieseling system	EF-10	primary and secondary throttle valves	EF-15
Float system	EF-11	Dash pot adjustment	
Boost controlled deceleration device (B.C.D.D.)	EF-11	(Automatic transmission cars only)	EF-16
Electric automatic choke	EF-13	Adjustment of operating pressure of	
Dash pot device		B.C.C.D.	EF-16
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DESCRIPTION

Type	Engine and vehicle
DCH340-1 -2	L18 on model 610 with *A/T with **M/T
DCH340-6 -7	L16 on model 510 with A/T with M/T
DCH340-8 -9	L16 on model 620 with A/T with M/T

*A/T: Automatic Transmission

**M/T: Manual Transmission

STRUCTURE AND OPERATION

The carburetors consist of the primary circuit for part-throttle operation, the secondary circuit for high-speed full-power operation, boost controlled deceleration device for coasting, and anti-dieseling solenoid for idle stop.

The float circuit, common between the primary and secondary circuits, incorporates the secondary switchover and starting mechanisms. Zenith Stromberg nozzles are used for the primary and secondary circuits.

These carburetors are of a down-draft type to produce the optimum air-fuel mixture under different operating conditions.

These carburetors present several distinct features of importance to the vehicle owners. A summary of the features is as follows:

1. Slow economizer to make a smooth connection with acceleration or deceleration during light load running. It also assures stable low speed performance.

2. Idle limiter to reduce harmful exhaust emissions to a minimum.

3. B.C.D.D. device for reducing "HC."

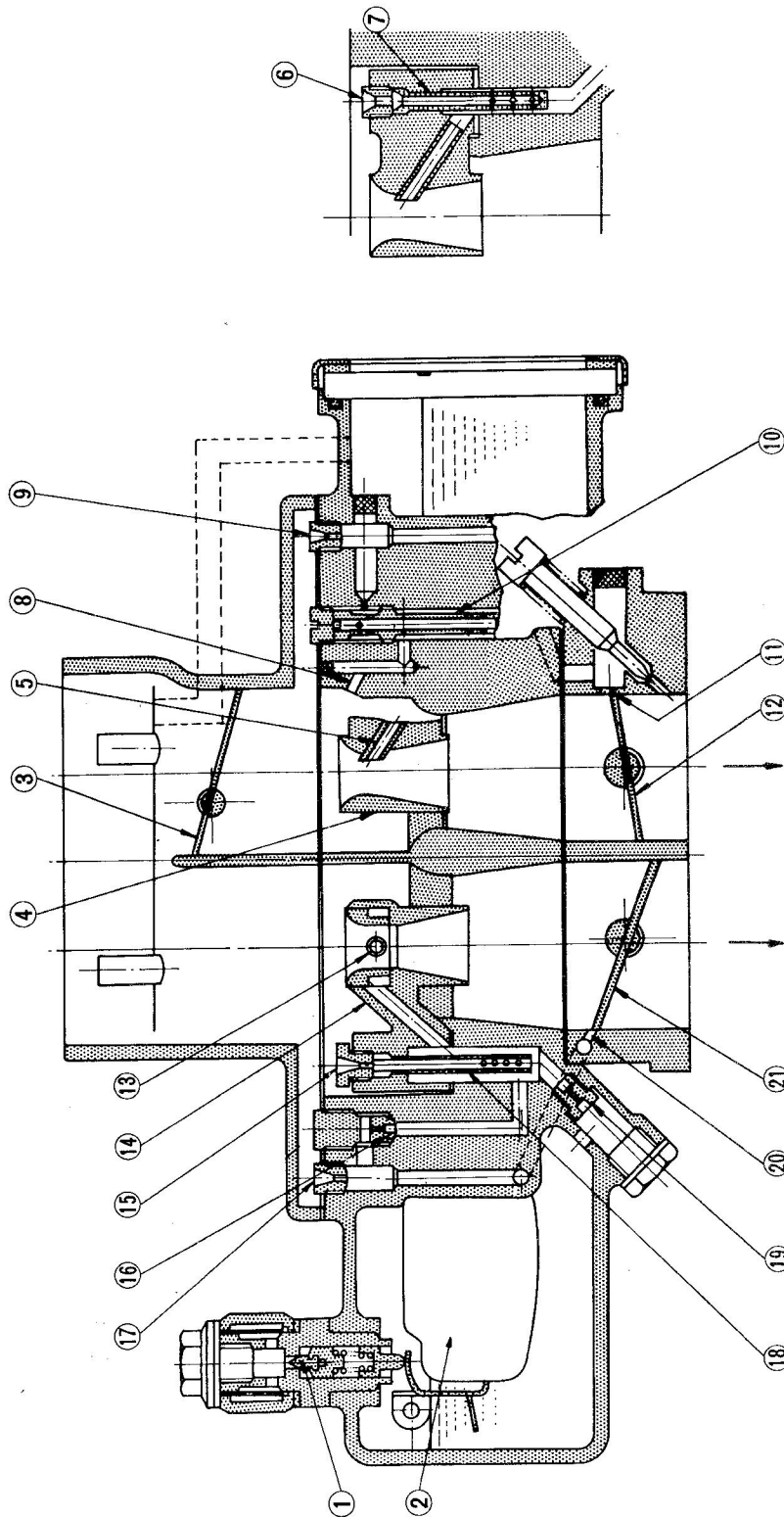
4. Electric automatic choke to facilitate cold starting as well as for reduced exhaust emissions.

5. Anti-dieseling solenoid to eliminate dieseling (run-on).

6. Power valve, or vacuum actuated booster, to insure smooth high-speed operation.

FUEL SYSTEM

ET022



- | | | | | | |
|---|-----------------------|----|-----------------------|----|-------------------|
| 1 | Float valve | 8 | P. 1st slow air bleed | 15 | S. main air bleed |
| 2 | Float | 9 | P. 2nd slow air bleed | 16 | S. slow jet |
| 3 | Choke valve | 10 | P. slow jet | 17 | S. slow air bleed |
| 4 | Primary small venturi | 11 | P. bypass hole | 18 | S. emulsion tube |
| 5 | Primary main nozzle | 12 | P. throttle valve | 19 | S. main jet |
| 6 | Main air bleed | 13 | S. main nozzle | 20 | S. bypass hole |
| 7 | Primary emulsion tube | 14 | S. small venturi | 21 | S. throttle valve |

Fig. EF-14 Sectional view of carburetor

FUEL SYSTEM

Primary system

1. Primary main system

The primary main system is of zenith stromburg type. Fuel flows as shown in Figure EE-14 through the main jet, mixing with air which comes in from the main air bleed and passes through the emulsion tube, and is pulled out into the venturi through the main nozzle.

2. Idling and slow system

During low engine speed, as shown in Figure EF-14, fuel flows through the slow jet located in rear right side of main nozzle, mixing with air coming from the 1st slow air bleed, again mixing with air coming from the 2nd slow air bleed and then is pulled out into the engine through the idle hole and bypass hole.

Adoption of the submerged type of slow jet eliminates such hesitation as occurs on sudden deceleration of the vehicle.

Slow economizer system is useful to obtain smooth deceleration at high speed.

Small opening of the throttle valve in idling or partial load creates a large negative pressure in the intake manifold.

By this negative pressure, fuel is measured through the slow jet located behind the main jet. And air coming from the 1st slow air bleed is mixed with fuel in the emulsion hole.

This mixture is further mixed and atomized with air coming from the 2nd slow air bleed. The atomized mixture is supplied to the engine from the idle hole and bypass hole via the slow system passage.

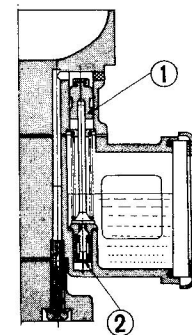
3. Accelerating mechanism

The carburetor is equipped with the piston type accelerating mechanism linked to the throttle valve. When the primary throttle valve, shown in Figure EF-15, is closed, the piston goes up, and fuel flows from the float chamber through the inlet valve into the space under the piston. When the throttle valve is opened, the piston goes down, opening the outlet valve, and fuel is forced out through the injector.

4. Power valve mechanism

The power valve mechanism, so-called vacuum piston type, utilizes the vacuum below the throttle valve.

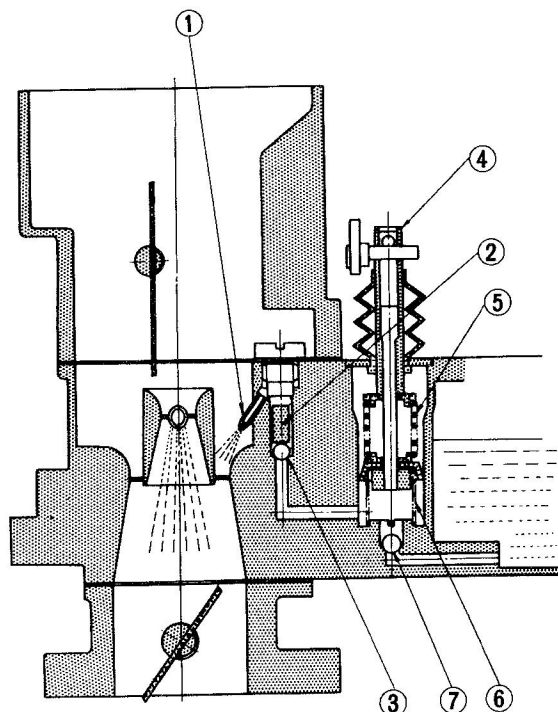
When the throttle valve is slightly opened during light load running, a high vacuum is created in the intake manifold. This vacuum pulls the vacuum piston upward against the spring, leaving the power valve closed. When the vacuum below the throttle valve is lowered during full load or accelerating running, the spring pushes the vacuum piston downward, opening the power valve to furnish fuel.



1 Vacuum piston
2 Power valve

ET024

Fig. EF-16 Sectional view of power valve



ET023

1 Pump injector
2 Weight
3 Outlet valve
4 Piston
5 Damper spring
6 Piston return spring
7 Inlet valve

Fig. EF-15 Acceleration mechanism

Secondary system

1. Secondary main system

The secondary main system is of zenith stromburg type.

Fuel-air mixture produced by the functions of the main jet, main air bleed and emulsion tube, in the same manner as in the primary system, is pulled out through the main nozzle into the small venturi.

Due to the double venturi of the secondary system, the higher velocity air current passing through the main nozzle promotes the fuel atomization.

The structure is almost the same as the primary side,

FUEL SYSTEM

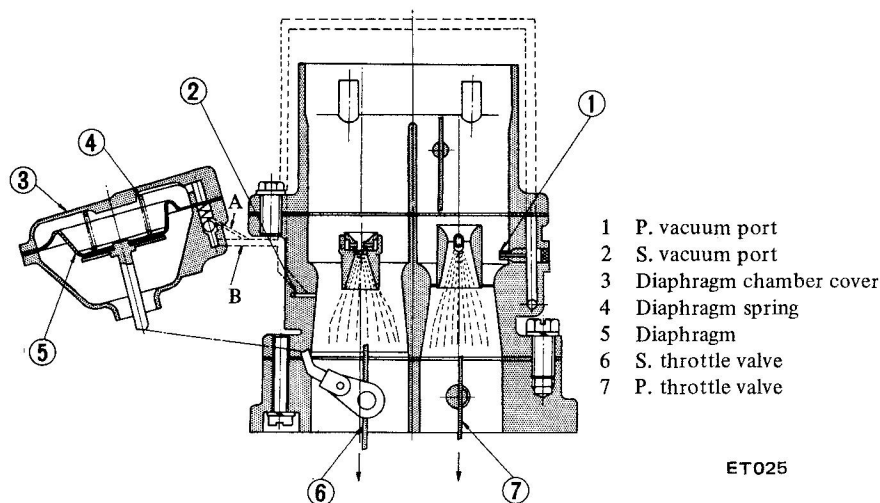


Fig. EF-17 Fuel throttle at high speed

2. Step system

The construction of this system may correspond to the idling and slow system of the primary system.

This system aims at the proper filling up of the gap when fuel supply is transferred from the primary system to the secondary one. The step port is located near the secondary throttle valve edge in its fully closed state.

3. Secondary switchover mechanism

The secondary throttle valve is

linked to the diaphragm which is actuated by the vacuum created in the venturi. A vacuum jet is provided at each of the primary and secondary venturies, and the composite vacuum of these jets actuates the diaphragm.

As the linkage causes the secondary throttle valve not to open until the primary throttle valve opening reaches approximately 50° , fuel consumption during normal operation is not excessive.

During high speed running, as shown in Figure EF-17, as the vacuum at the venturi is increased, the diaphragm is pulled against the diaphragm spring force, and then secondary throttle valve is opened.

The other side, during low speed running (as the primary throttle valve opening does not reach 50°), the secondary throttle valve is locked to close completely by the locking arm which is interlocked with primary throttle arm by linkage.

When the primary throttle valve opening reaches wider position than 50° , the secondary throttle valve is ready to open, because the locking arm revolves and leaves from the secondary throttle arm.

Anti-dieseling system

The carburetor is equipped with an anti-dieseling solenoid. As the ignition switch is turned off, the valve is brought into operation, shutting off the supply of fuel to the slow circuit. The following figure shows a sectional view of this control.

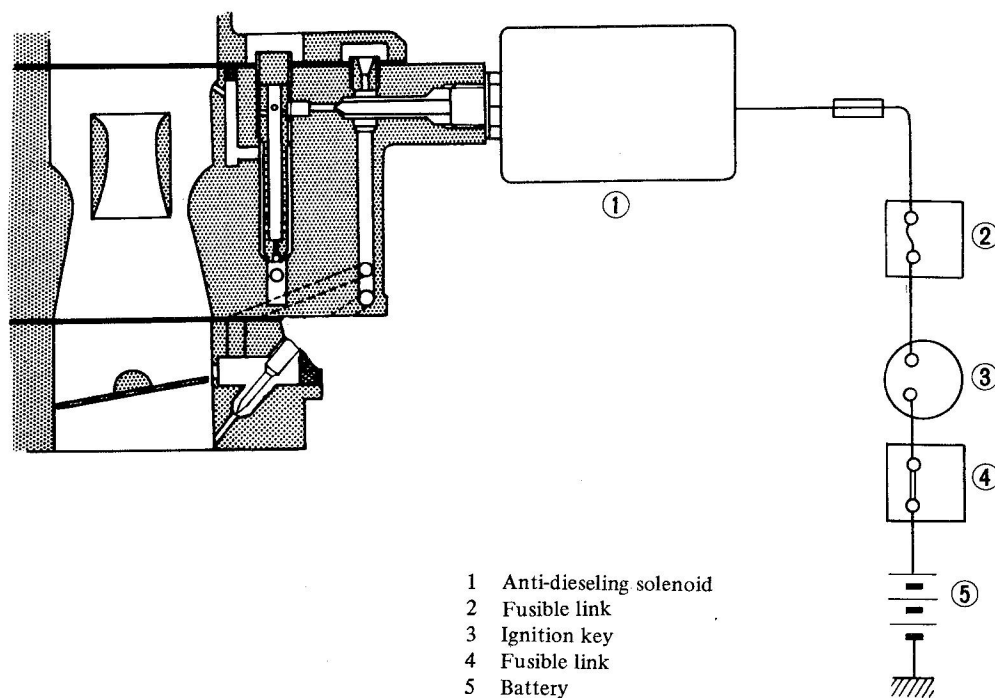


Fig. EF-18 Schematic drawing of anti-dieseling solenoid

FUEL SYSTEM

Float system

There is only one float chamber, while two carburetor systems, primary and secondary, are provided.

Fuel fed from the fuel pump flows through the filter and needle valve into the float chamber. A constant fuel level is maintained by the float and needle valve.

Because of the inner air vent type of the float chamber ventilation, the fuel consumption will not be influenced by some dirt accumulated in the air cleaner.

The needle valve includes special hard steel ball and will not wear for all its considerably long use. Besides, the insertion of a spring will prevent the flooding at rough road running.

Boost controlled deceleration device (B.C.D.D.)

Boost controlled deceleration device (B.C.D.D.) serves to reduce HC emissions emitted from engine during coasting.

The high manifold vacuum during coasting prevents the mixture from complete combustion because of reduced amount of mixture per cylinder per rotation of engine, with a result that large amount of HC emissions is emitted into the atmosphere.

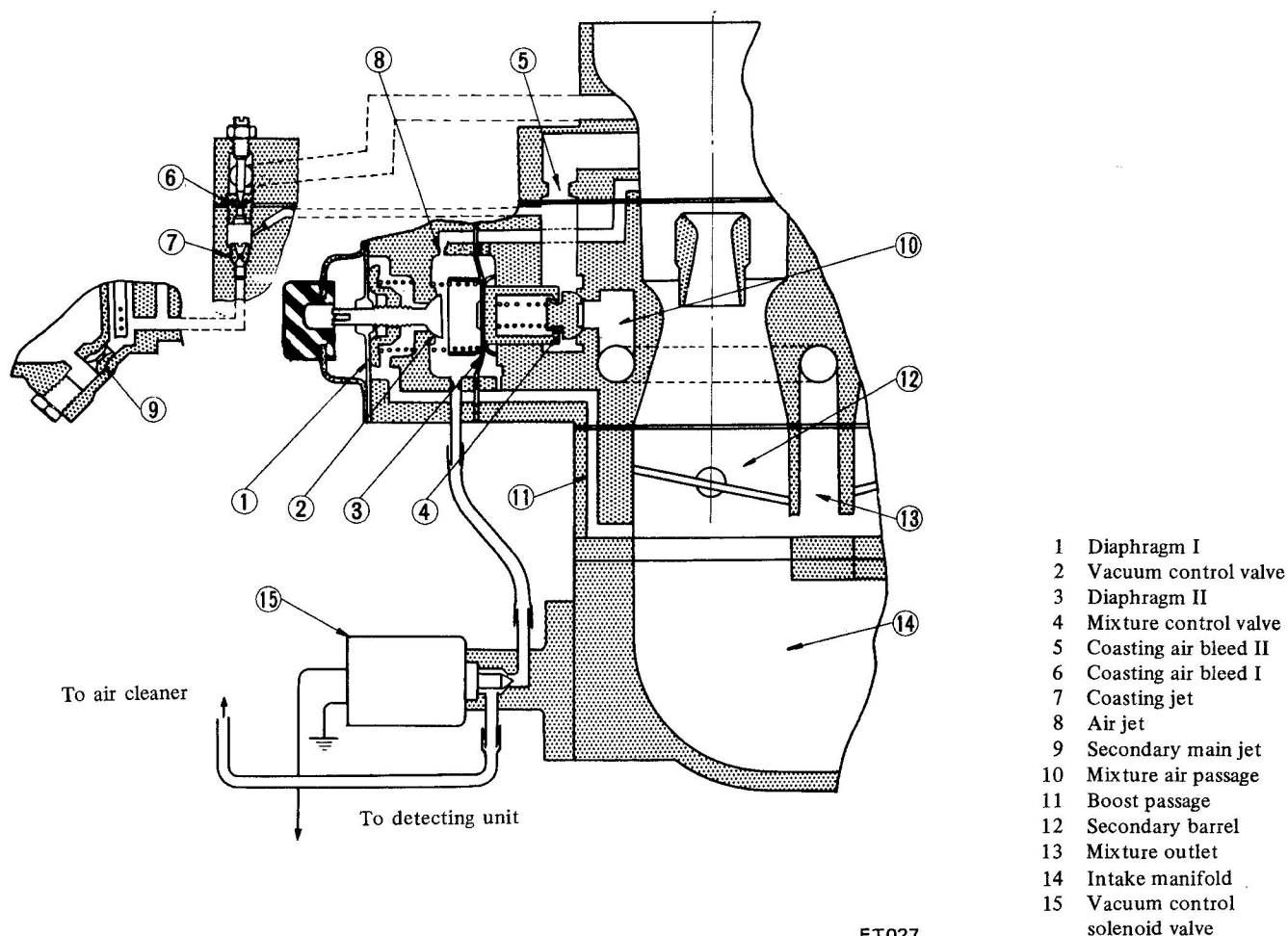
B.C.D.D. has been designed based on the idea of eliminating this objection. It operates in such a way that, when manifold vacuum exceeds a pre-

determined value, it provides an additional mixture of optimum mixture ratio and quantity into the manifold by opening the separate mixture passage in the carburetor. Complete combustion of fuel is assisted by this additional mixture, and remarkably reduces the amount of HC contained in exhaust gases.

During the period from coasting to idling, the transmission produces a signal which in turn energizes the vacuum control solenoid.

As this takes place, the valve is lifted off its seat, releasing the vacuum chamber to the atmosphere.

The mixture control valve will then be closed, returning engine speed to the predetermined idling.



ET027

Fig. EF-19 Sectional view of B.C.D.D.

FUEL SYSTEM

Performance

The diaphragm I ① detects the manifold vacuum and, when the vacuum exceeds a pre-determined value, acts so as to open the vacuum control valve ②. This opening makes the manifold vacuum introduce into the second vacuum chamber and actuates the diaphragm II ③.

When diaphragm II operates, the mixture control valve ④ opens the passage and introduces the additional mixture into the manifold.

The amount of the mixture is controlled by the servo-action of the mixture control valve ④ and vacuum control valve ② so that the manifold

vacuum may be kept at the pre-determined value.

The amount of mixture depends mainly upon the coasting air bleed II ⑤, while its mixture ratio is determined by the coasting jet ⑦ and coasting air bleed ⑥.

Performance of vacuum control solenoid valve

Manual transmission

The vacuum control solenoid valve is controlled by a speed switch that is actuated by the speedometer needle.

As the vehicle speed falls below 10

mph, this switch is activated, producing a signal.

This signal is then amplified as it passes through a built-in amplifier, causing the vacuum control valve to function.

Automatic transmission

The automatic transmission incorporates an inhibitor switch.

This switch is operated only when the transmission is placed in either "N" or "P" position.

With the transmission placed in either of the above ranges, the switch causes the vacuum control valve to function.

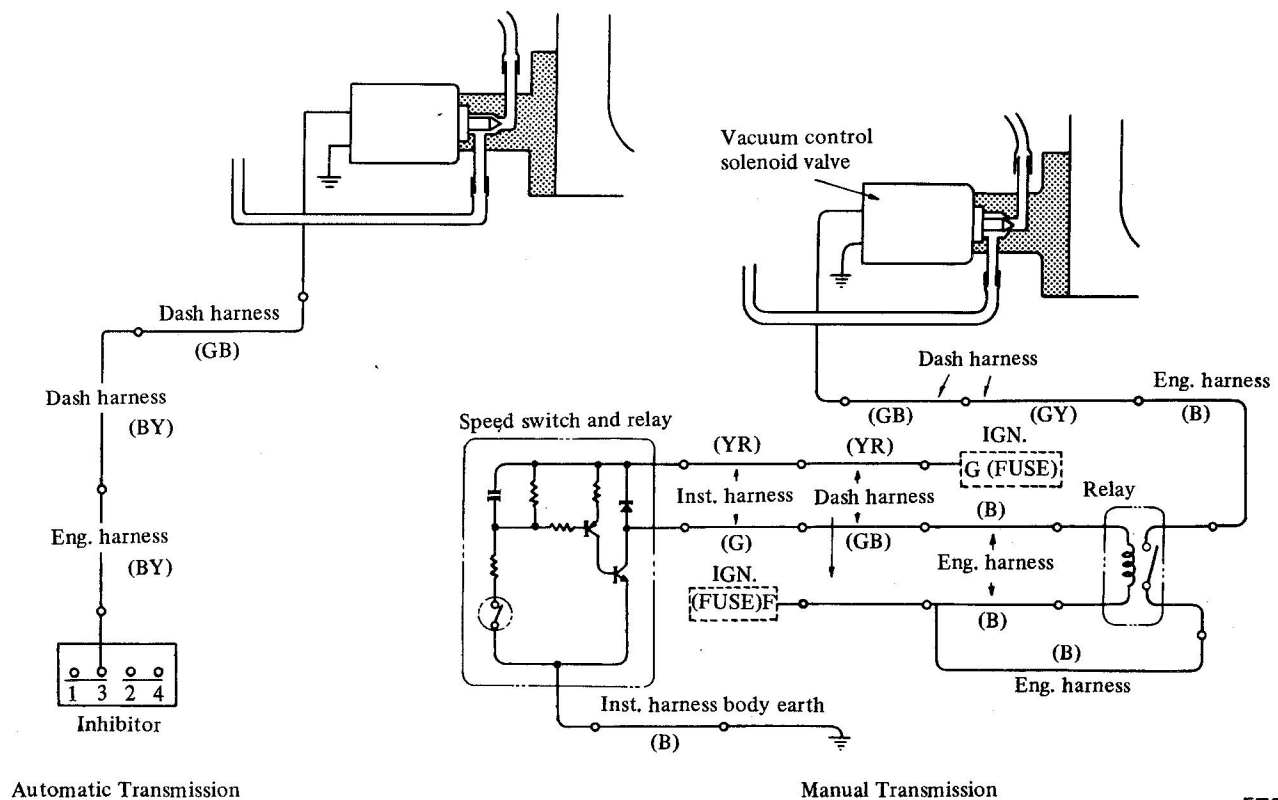


Fig. EF-20 Electrical control system of B.C.D.D.

FUEL SYSTEM

Electric automatic choke

An electric heater warms a bimetal interconnected to the choke valve, and controls the position of choke valve and throttle valve in accordance with the elapse of time, or the warm-up condition of engine.

The construction and function of each part of this carburetor are as follows:

- (1) Bimetal and heater in thermostat cover

Electric current flows through the heater as the engine starts, and warms bimetal. The deflection of bimetal is transmitted to the choke valve through the choke valve lever.

- (2) Fast idle cam

The fast idle cam determines the opening of throttle valve so as to obtain proper amount of mixture corresponding to the opening of the choke valve which in turn depends upon the warmed-up condition of the engine.

- (3) Fast idle adjusting screw

This screw adjusts the opening of the throttle valve of fast idle cam.

- (4) Unloader

When accelerating the engine during the warm-up period, that is, before choke valve opens sufficiently, this unloader makes the choke valve open to a certain extent so as to obtain an adequate air-fuel mixture.

- (5) Vacuum diaphragm

The moment when engine is ready just after the engine has started by cranking, this diaphragm forces open choke valve to the predetermined extent so as to provide proper air-fuel ratio.

- (6) Bimetal case index mark

The bimetal case index mark is used for setting the moment of the bimetal which controls the air-fuel mixture ratio required for starting.

Dash pot device (Automatic transmission cars only)

These carburetors are equipped

with a dash pot interlocked with the primary throttle valve through a link mechanism. The dash pot, which is exclusively installed on vehicles equipped with automatic transmission, is intended to prevent engine stall that would result from quick application of the brake immediately after driving the vehicle, or from the quick release of the accelerator pedal after treading it slightly.

In such condition, a throttle lever strikes against the dash pot stem and makes the primary throttle valve gradually close, thus keeping the engine running.

ADJUSTMENT

Adjusting carburetor idle-rpm and mixture ratio

Idle mixture adjustment requires the use of a "CO" meter. When preparing to adjust idle mixture, it is essential to have the meter thoroughly warmed up and calibrated.

1. Warm up engine sufficiently.
2. Continue engine operation for one minute under idling speed.
3. Adjust throttle adjusting screw so that engine speed is 800 rpm for cars with a manual transmission (in "N" range for automatic transmission).
4. Check ignition timing, if necessary adjust it to the specifications. (5°/800 rpm, retard side).
5. Adjust idle adjusting screw so that "CO" percentage is $1.5 \pm 0.5\%$.
6. Repeat the procedures as described in items 3 and 5 above so that "CO" percentage is $1.5 \pm 0.5\%$ at 800 rpm.

Caution:

- a. On automatic transmission equipped model, check should be done in "D" range. Be sure to apply parking brake and to lock both front and rear wheels with wheel chocks.
- b. Hold brake pedal while stepping down on accelerator pedal. Otherwise car will rush out dangerously.

7. On automatic transmission equipped model, make sure that the adjustment has been made with the selector lever in "N" position.

And then check the specifications with the lever in "D" position. Insure that CO percent and idle speed are as follows:

Idling rpm	650
"CO" percentage	$1.5 \pm 0.5\%$

Readjust by turning in or out throttle adjust screw or idle adjusting screw if it is still out.

Notes:

- a. Do not attempt to screw down idle adjusting screw completely to avoid damage to tip, which will tend to cause malfunctions.
- b. After idle adjustment has been made, shift the lever to "N" or "P" range for automatic transmission.
- c. Remove wheel chocks when running.

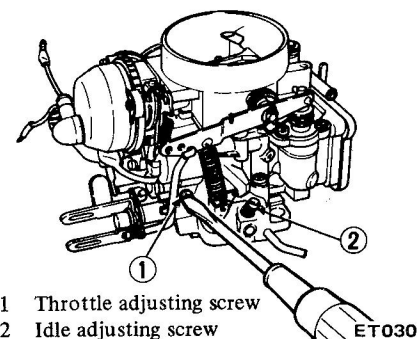


Fig. EF-21 Throttle and idle adjusting screws

Idle limiter cap

Do not remove this idle limiter cap unless necessary. If this unit is removed, it is necessary to re-adjust it at the time of installation. To adjust proceed as follows.

1. After adjusting throttle or idle speed adjusting screw, check to be sure that the amount of "CO" contained in exhaust gases meets the

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established standard.

2. Install idle limiter cap in position, making sure that the adjusting screw can further turn 1/8 rotation in the "CO-RICH" direction.

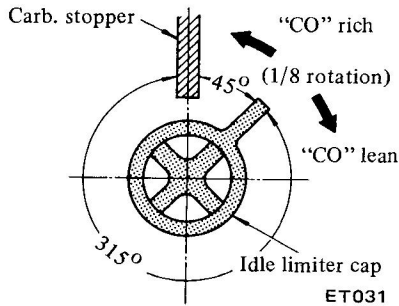


Fig. EF-22 Setting of idle limiter cap

Fuel level adjustment

A constant fuel level is maintained by float level and ball valve. If fuel level is in accord with level gauge line, float level is properly set. If float level is not correct, adjust it by bending float seat as shown in Figure EF-23.

Approximately H mm is required for effective stroke of needle valve. So adjust gap between valve stem and float seat to H mm with float fully lifted up by bending float stopper.

H; 1.5 mm (0.0591 in)

Fast idle adjustment

Choke valve at fully closed position automatically opens throttle valve at an optimum angle for starting engine through a link mechanism.

Normal Tune-up

In moderate climates, adjust manual transmission fast idle RPM to the specifications by turning fast idling screw in or out as necessary.

Carburetor removed

If a new or reconditioned carburetor is being installed, tune as follows:

1. With carburetor assembly re-

moved from engine, measure throttle valve clearance ("A" in Figure EF-24) with a wire gauge, placing the upper side of fast idling screw on the second step of the fast idling cam.

2. Install carburetor on engine.

3. Start engine and measure RPM. It

should be approximately 2,000 rpm for Manual transmission and 2,400 rpm for Automatic transmission.

4. Turn fast idling screw counter-clockwise to increase, or clockwise to decrease, to adjust fast idle RPM.

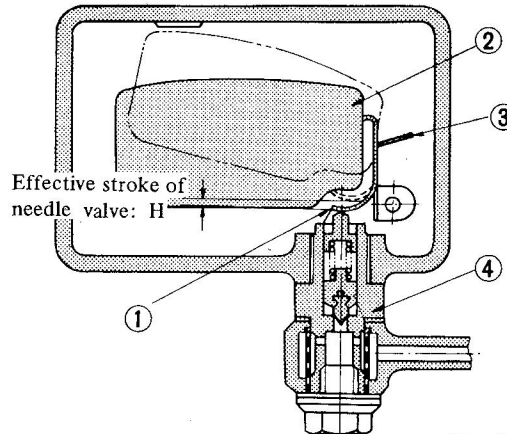


Fig. EF-23 Adjusting fuel level

	Throttle opening (degree)	Clearance "A" mm (in)	Engine revolution (rpm)
Manual Transmission	12 ± 0.5	0.95 ± 0.05 (0.0374 ± 0.0020)	$2,000 \pm 100$
Automatic Transmission	14 ± 0.5	1.17 ± 0.05 (0.0461 ± 0.0020)	$2,400 \pm 100$

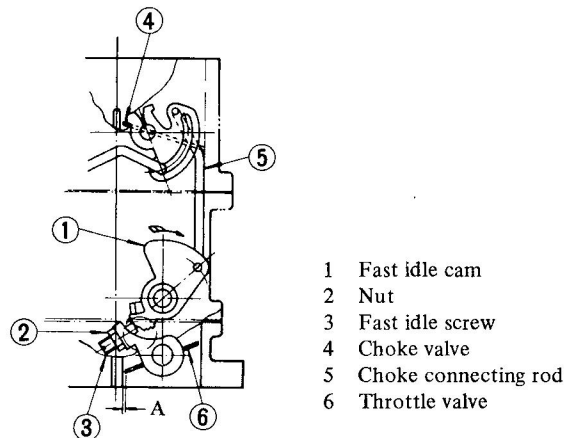


Fig. EF-24 Adjustment fast idle opening

Vacuum break adjustment

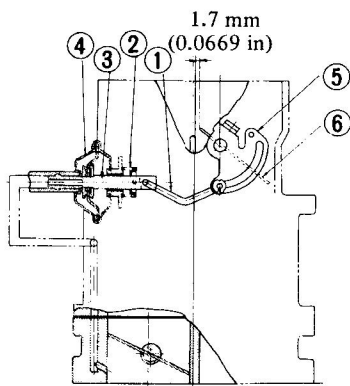
1. Completely close choke valve.

2. Hold choke valve by stretching a rubber band between choke piston lever and stationary part of carburetor.

3. Grip vacuum break rod with pliers, and pull straight fully.

4. Under this condition, adjust the gap between choke valve and carburetor body to 1.7 mm (0.067 in) by bending vacuum brake rod. See Figure EF-25.

FUEL SYSTEM



ET033

Fig. EF-25 Vacuum break adjustment

2. Bimetal cover setting.

Position bimetal cover so that the index marks are aligned as shown in Figure ET-26. (Center of the index marks.)

Note: When somewhat over-choked, set bimetal cover by turning it clockwise about one division of the scale graduations.

Choke unloader adjustment

1. Close choke valve completely.
2. Hold choke valve by stretching a rubber band between choke piston lever and stationary part of carburetor.
3. Open throttle lever until it opens fully.

Under this condition, adjust the clearance between choke valve and carburetor body to 4.4 mm (0.173 in) by bending unloader tongue.

Note: Make sure that throttle valve opens when carburetor is mounted on the car.

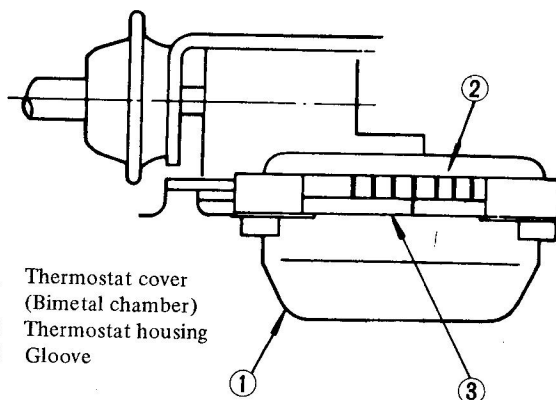
If throttle valve fails to open, unloader becomes inoperative, resulting in poor acceleration after engine is started.

Bimetal setting

1. Measurement of bimetal heater resistance:

Install bimetal cover on carburetor. Make sure that resistance across the terminal and carburetor body is in the range of 9.8 to 10.2 ohms. Measure the resistance without the flow of electric current through heater and at about 21°C (70°F).

Note: Use an accurate measuring instrument, such as a wheatstone bridge.



ET034

Fig. EF-26 Bimetal setting

Adjustment of interlock opening of primary and secondary throttle valves

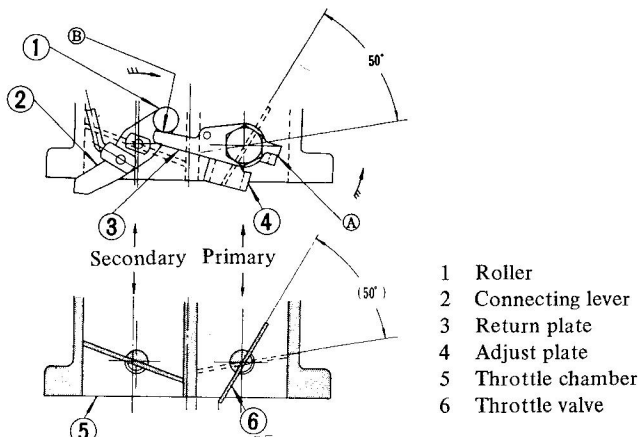
Figure EF-27 shows that primary throttle valve opens 50°. When primary throttle valve opens 50° adjusting plate integrated with throttle valve is in contact with return plate at

A.

When throttle valve further opens, locking arm is detached from secondary throttle arm, permitting secondary system to start operation.

Linkage between primary and secondary throttles will operate properly if distance between throttle valve and inner wall of throttle chamber is 7.4 mm (0.291 in).

Adjustment is made by bending connecting link. See Figure EF-27.



ET035

Fig. EF-27 Adjusting interlock opening

FUEL SYSTEM

Dash pot adjustment (Automatic transmission cars only)

Proper contact between throttle lever and dash pot stem provides normal dash pot performance. Adjustment of the proper contact can be made by dash pot set screw.

If normal set can not be obtained between dash pot stem and throttle arm, rotate dash pot to the proper position.

Installed on engine

1. It is necessary that the idling speed of engine and mixture have been well turned up and engine is sufficiently warm.
2. Turn throttle valve by hand, and read engine speed when dash pot just touches the stopper lever.
3. Adjust the position of dash pot by turning nut until engine speed is in the range of 1,600 to 1,800 rpm.
4. Then fasten loosened lock nut.
5. Make sure that the engine speed is smoothly reduced from 2,000 to 1,000 rpm in about three seconds.

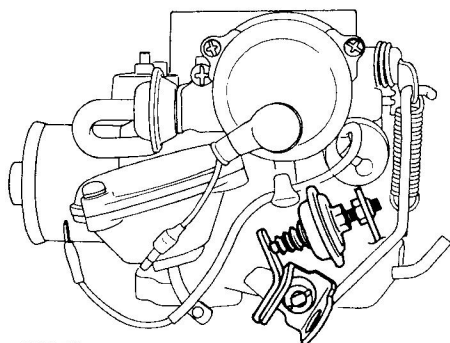


Fig. EF-28 Dash pot adjustment

Adjustment of operating pressure of B.C.C.D.

Principally, it is unnecessary to adjust the B.C.D.D., however if there is any requirement the adjustment procedure is as follows;

Prepare the following tools:

1. A tachometer to measure the engine speed while idling, and screw-driver.
2. A Vacuum gauge and connecting pipe.

Notes:

- a. A quick-response boost gauge such as Bourdon's tube is recommended. Do not use manometer.
- b. Special tools are not required.

Warming-up operation

Continue warning-up operation until the engine reaches its normal operating temperature.

Connecting vacuum gauge

Connect rubber hose between

vacuum gauge and intake manifold as shown.

Disconnect solenoid valve and let solenoid valve free.

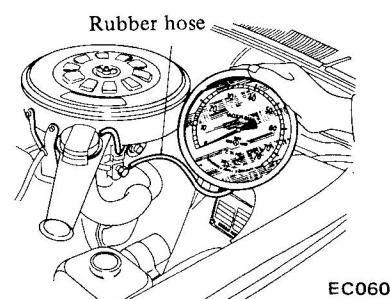


Fig. EF-29 Connecting vacuum gauge

Adjustment of idling

Adjust the engine at normal idling setting.

	Engine idling (rpm)	Idling timing (degree, retard side)	CO (%)
M/T Vehicle	800	5° BTCC	1.5 ± 0.5
A/T Vehicle	650 (in "D" range)	5° BTDC	1.5 ± 0.5

M/T: Manual Transmission

A/T: Automatic Transmission

Racing

Place shift lever in neutral for M/T, or N or P for A/T. Raise the engine speed up to 3,000 to 3,500 rpm under no-load, and close the throttle valve by releasing it from hand. Examine the engine revolution whether it falls to idling revolution or not.

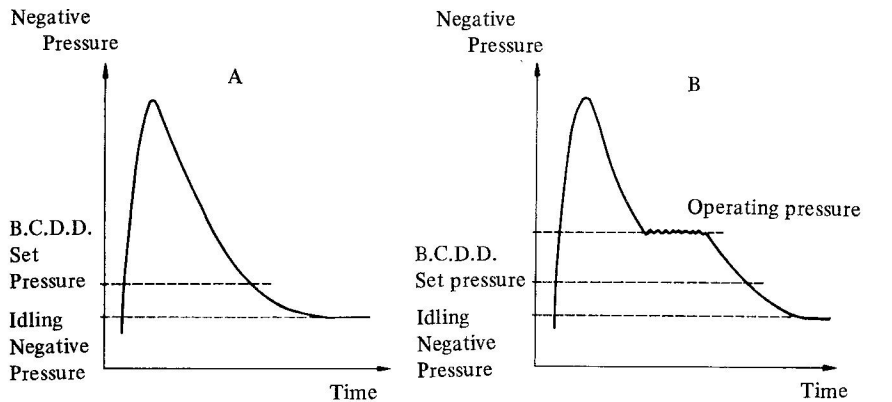
When the engine revolution falls to the idling speed
(See Figure EF-34)

At this moment, the negative pressure of manifold rises above approximately -550 mmHg (-21.7 inHg) and then gradually falls to the pressure of idling [about -420 mmHg (-16.5 inHg)]. The process of this pressure fall takes one of the three forms as

illustrated in Figures EF-30, EF-32 and EF-33 according to the difference the operating pressure of B.C.D.D.

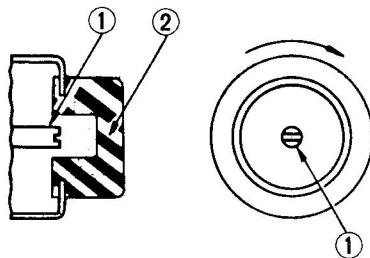
1. When the operating pressure is too high, B.C.D.D. remains inoperative, and negative pressure decreases without being sustained while it is falling, just like that of the engine on which a B.C.D.D. is absent. See diagram (A).
2. When the operating pressure is lower than that of the case of (A) but is higher than the set pressure: The negative pressure which has once risen is kept constant at a certain value (operating pressure) for about one second, and then gradually falls down to the idling negative pressure. See diagram (B).

FUEL SYSTEM



ET043

Fig. EF-30 Characteristic curve
— high negative pressure —



- 1 Adjusting screw "S"
- 2 Cover "C"

ET037

Fig. EF-31 Adjusting operating pressure

Notes:

- a. Turning adjusting screw "S" one-eighth rotation in either direction will cause a change in operation pressure of 0.79 inHg (20 mmHg). This adjusting screw is left-hand threaded.
- b. Turn adjusting screw "S" counter-clockwise to increase the negative pressure.
- c. Turn adjusting screw clockwise to decrease the negative pressure.

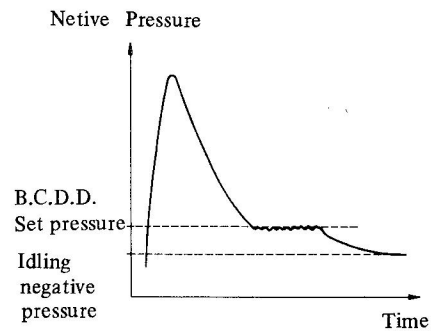
Turn adjusting screw "S" as outlined below until correct pressure is obtained. Slightly turn this adjusting screw clockwise and then race engine. Do not fit tip of screwdriver tightly in screw slot.

When the operating pressure equals set pressure.

When the operating pressure is equalized to set pressure, and then falls to idling pressure, install cover "C."

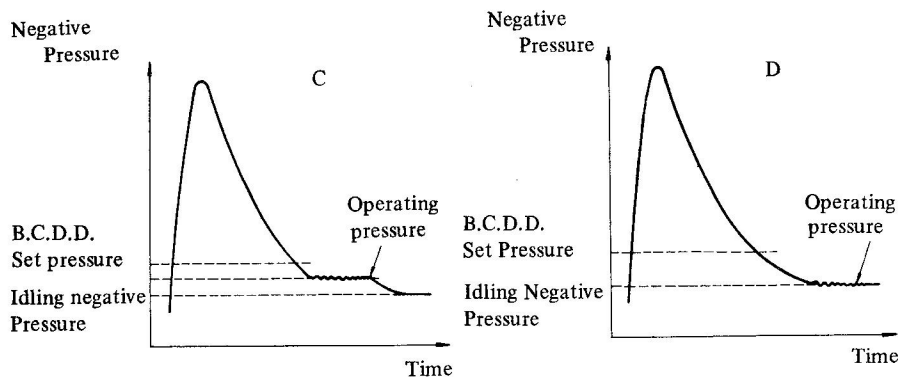
B.C.D.D. set pressure
Manual transmission vehicle
 $-500 \pm 20 \text{ mmHg}$
 $(-19.7 \pm 0.79 \text{ inHg})$

Automatic transmission vehicle
 $-480 \pm 20 \text{ mmHg}$
 $(-18.9 \pm 0.79 \text{ inHg})$



ET045

Fig. EF-33 Characteristic curve
— proper negative pressure —



ET044

Characteristic curve

Low negative pressure

Fig. EF-32 Characteristic curve
— low negative pressure —

When the engine revolution does not fall to the idling speed (See Figure EF-34)

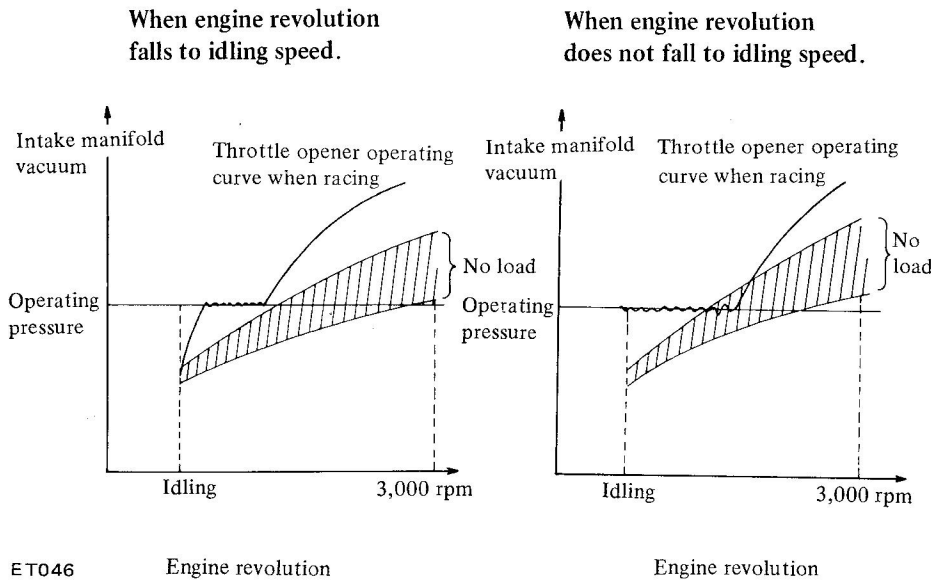


Fig. EF-34 Characteristic curve of B.C.D.D.

When the engine revolution does not fall to the idling speed, it is necessary to fall the idling negative pressure of manifold to lower than the set pressure of B.C.D.D. (The engine revolution does not fall to the idling speed when the idling negative pressure is higher than the set pressure of B.C.D.D.).

In this case, there requires to labour the engine by (1) road test or (2) chassis dynamometer or (3) raise up rear suspension member by stand. And accelerate the car 40 to 50 mph with top gear for M/T or D range for A/T, then release the accelerator pedal and let the car deceleration. Then check the B.C.D.D. set pressure whether it is in the predetermined value or not. The process of this pressure fall takes one of the three forms as illustrated in Figures EF-30, EF-32 and EF-33 according to the difference of the operating pressure of B.C.D.D.

When the operating pressure is too high

When the operating pressure is higher than the set pressure. The negative pressure which has once risen

is kept constant at a certain value (operating pressure) for about one second, and then gradually falls to the idling negative pressure. See diagram (B). Adjustment of this condition is exactly same as that of when the engine revolution falls to the idling speed. (Mentioned above.)

When the operating pressure is too low

1. When the operating pressure is somewhat low, the negative pressure becomes constant for some while at a value below set pressure, and then falls to idling negative pressure. See diagram (C).
2. When the operating pressure is exceedingly low, the negative pressure will not fall to idling pressure and the speed of engine is not restored to idling speed. In extreme cases the engine's speed fails to attain idling speed although to that of idling. See diagram (D).

Turn adjusting screw "S" until correct pressure is obtained. Slightly turn this adjusting screw counterclockwise and then race the engine. Do not fit tip of screwdriver tightly in screw slot.

MAJOR SERVICE OPERATION

The perfect carburetor delivers the proper fuel and air ratios for all speeds of the particular engine for which it was designed. By completely disassembling at regular intervals, which will allow cleaning of all parts and passages, the carburetor can be returned to its original condition and it will then deliver the proper ratios as it did when new.

To maintain the accurate carburetion of passages and discharge holes, extreme care must be taken in cleaning.

Use only carburetor solvent and compressed air to clean all passages and discharge holes. Never use wire or other pointed instrument to clean as calibration of carburetor will be affected.

Removal

1. Remove air cleaner.
2. Disconnect fuel and vacuum lines from carburetor.
3. Remove throttle lever.
4. Remove four nuts and washers retaining carburetor to manifold.
5. Lift carburetor off manifold.
6. Remove and discard the gasket used between carburetor and manifold. Replace it, if necessary.

Disassembly and assembly

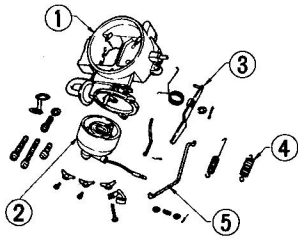
Disassembly

Do not remove throttle plates.

Carburetor assembly

1. Remove throttle return spring from primary side.
2. Remove pump lever and pump rod.
3. Remove cam connecting rod.
4. Remove thermostat cover by unscrewing three set screws.
5. Remove choke chamber by unscrewing four set screw and remove throttle return spring from secondary side.

FUEL SYSTEM



ET038

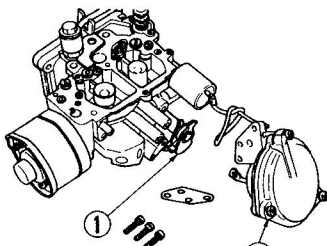
- | | |
|------------------|-------------|
| 1 Venturi | 4 Secondary |
| 2 Main air bleed | 5 Primary |
| 3 Emulsion take | |

Fig. EF-34 Removing thermostat

6. Separate float chamber and throttle chamber by unscrewing four set screws.

Float chamber

1. Remove diaphragm chamber assembly and diaphragm chamber gasket.
2. Remove fast idle cam, cam spring and counter lever.

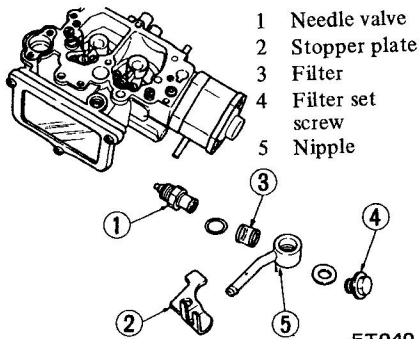


- | | |
|-----------------|---------------------|
| 1 Fast idle cam | 2 Diaphragm chamber |
|-----------------|---------------------|

ET039

Fig. EF-35 Removing diaphragm chamber

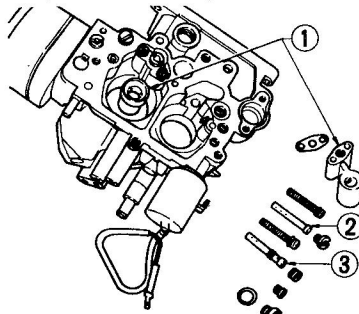
3. Remove filter set screw, nipple, filter, needle valve and stopper plate.



ET040

Fig. EF-36 Removing filter

4. Remove cylinder plate, pump cover, piston, piston return spring and inlet valve by unscrewing two set screws.
5. Remove injector spring and outlet valve.
6. Remove small venturies, main air bleeds and emulsion tubes from primary and secondary sides.



ET041

Fig. EF-37 Removing venturies

7. Remove slow jet and slow air bleed.
8. Remove primary and secondary main jets.
9. Remove level gauge cover, float chamber, level gauge, rubber seal, float shaft colour and float.
10. Remove power valve.
11. Remove return plate, sleeve, fast idle lever, spring hanger and throttle lever.

Anti-dieseling solenoid

Removal

Solenoid is cemented at factory. Use special tool "ST19150000" to remove a solenoid.

When this tool is not effective, use a pair of pliers to loosen body out of position.

Installation

1. Before installing a solenoid, it is essential to clean all threaded parts of carburetor and solenoid. Supply

screws in holes and turn them in two or three pitches.

2. First, without disturbing the above setting, coat all exposed threads with adhesive the "Stud Lock" of LOCTITE or equivalent.

Then, torque screws to 35 to 55 kg-cm (30 to 48 in-lb) using a special tool "ST19150000."

After installing anti-dieseling solenoid, leave carburetor more than 12 hours without operation.

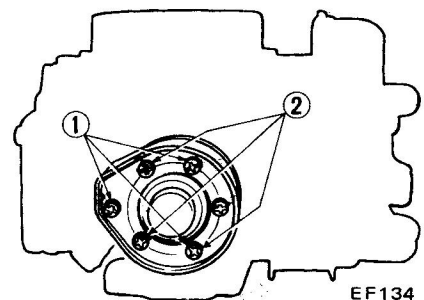
3. After replacement is over, start engine and check to be sure that fuel is not leaking, and that anti-dieseling solenoid is in good condition.

Notes:

- a. Do not allow adhesive getting on valve. Failure to follow this caution would result in improper valve performance or clogged fuel passage.
- b. In installing valve, use caution not to hold body directly. Instead, use special tool, tightening nuts as required.
- c. After installing a new solenoid, check to be certain that there is no leakage, cracks or otherwise deformation.

B.C.D.D.

Remove B.C.D.D. by unscrewing three securing screws ①. Do not unscrew three B.C.D.D. assembly screw ②.



EF134

Fig. EF-39 B.C.D.D. Securing screws

When installing, after screwing three securing screws ①, rescrew three B.C.D.D. assembly screws ② in order to prevent the warp of B.C.D.D. body.

Tightening torque:

20 to 40 kg-cm (17 to 35 in-lb)

FUEL SYSTEM

Assembly and installation

Follow disassembly and removal procedures in reverse.

Replace gaskets, if necessary.

In disassembling interlock link and related components, be careful not to bend or deform any of components.

Careful reassembly will restore smooth operation of all interlock parts.

Cleaning and inspection

Dirt, gum, water or carbon contamination in or on exterior moving parts of a carburetor are often responsible for unsatisfactory performance. For this reason, efficient carburetion depends upon careful cleaning and inspection while servicing.

1. Blow all passages and castings with compressed air and blow off all parts until dry.

Note: Do not pass drills or wires through calibrated jets or passages as this may enlarge orifice and seriously affect carburetor calibration.

2. Check all parts for wear. If wear is noted, defective parts must be replaced. Note especially the following:

7. Push connecting rod of diaphragm chamber and block passage of vacuum by finger. And when connecting rod becomes free, check for leakage of air and damage of diaphragm.

(1) Check float needle and seat for wear. If wear is noted, assembly must be replaced.

(2) Check throttle and choke shaft bores in throttle chamber and choke chamber for wear or out-of-roundness.

(3) Inspect idle adjusting needle for burrs or ridges. Such a condition requires replacement.

3. Inspect gaskets to see if they appear hard or brittle or if edges are torn or distorted. If any such condition is noted, they must be replaced.

4. Check filter screen for dirt or lint. Clean, and if it is distorted or remains plugged, replace.

5. Check linkage for operating condition.

6. Inspect operation of accelerating pump. Pour fuel into float chamber and make throttle lever operate. And check condition of fuel injection from the accelerating nozzle.

why these components must be fabricated with utmost care. To clean them, use cleaning solvent and blow air on them. Larger inner numbers stamped on the jets indicate larger diameters. Accordingly, main and slow jets with larger numbers provide richer mixture, and the smaller numbers the leaner mixture. Inversely, the main and slow air bleeds, which are for air to pass through, make the fuel leaner if they bear larger numbers, and the smaller numbers the richer fuel.

TROUBLE DIAGNOSES AND CORRECTIONS

In the following table, the symptoms and causes of carburetor troubles and remedies for them are listed to facilitate quick repairs.

There are various causes of engine troubles. It sometimes happens that the carburetor which has no defect seems apparently to have some troubles, when electric system is defective. Therefore, whenever the engine has troubles, electric system must be checked first before taking to carburetor adjustment.

JETS

The carburetor performance depends on jets and air bleeds. That is

Condition	Probable cause	Corrective action
Overflow	Dirt accumulated on needle valve. Fuel pump pressure too high. Needle valve seat improper.	Clean needle valve. Repair pump. Lap or replace.
Excessive fuel consumption	Fuel overflow. Each main jet, slow jet too large. Each main air bleed clogged. Choke valve does not fully open. Outlet valve seat of accelerator pump improper. Linked opening of secondary throttle valve too early.	See above item. Replace. Clean. Adjust. Lap. Adjust.

FUEL SYSTEM

Condition	Probable cause	Corrective action
Power shortage	Each main jet clogged. Each throttle valve does not fully open. Idling adjustment incorrect. Fuel strainer clogged. Vacuum jet clogged. Air cleaner clogged. Diaphragm damaged. Power valve operated improperly.	Clean. Adjust. Repair. Clean. Clean. Clean. Replace. Adjust.
Improper idling	Slow jet clogged. Each throttle valve does not close. Secondary throttle valve operated improperly. Each throttle valve shaft worn. Packing between manifold/carburetor defective. Manifold/carburetor tightening improper. Fuel overflow. B.C.D.D. adjustment incorrect. Damaged vacuum control solenoid. Sticked anti-stall dash pot.	Clean. Adjust. Overhaul and clean. Replace. Replace packing. Correct tightening. See the first item. Adjust. Replace. Replace.
Engine hesitation	Main jet or slow jet clogged. By pass hole, idle passage clogged. Emulsion tube clogged. Idling adjustment incorrect. Secondary throttle valve operated improperly.	Clean. Clean tube. Clean. Correct adjustment. Overhaul and clean.
Engine does not start.	Fuel overflows. No fuel. Idling adjustment incorrect. Fast idle adjustment incorrect. Damaged anti-dieseling solenoid.	See the first item. Check pump, fuel pipe and needle valve. Adjust. Adjust. Replace.

FUEL SYSTEM

EVAPORATIVE EMISSION CONTROL SYSTEM

CONTENTS

DESCRIPTION	EF-22	Checking fuel tank vacuum	EF-23
FLOW GUIDE VALVE	EF-23	relief valve operation	EF-23
Checking fuel tank, vapor-liquid separator and vapor vent line	EF-23	SERVICE DATA AND SPECIFICATIONS	EF-24
Checking flow guide valve	EF-23		

DESCRIPTION

This system consists of four basic elements indicated below:

1. Fuel tank with positive sealing filler cap.
2. Vapor-liquid separator.
3. Vapor vent line.
4. Flow guide valve.

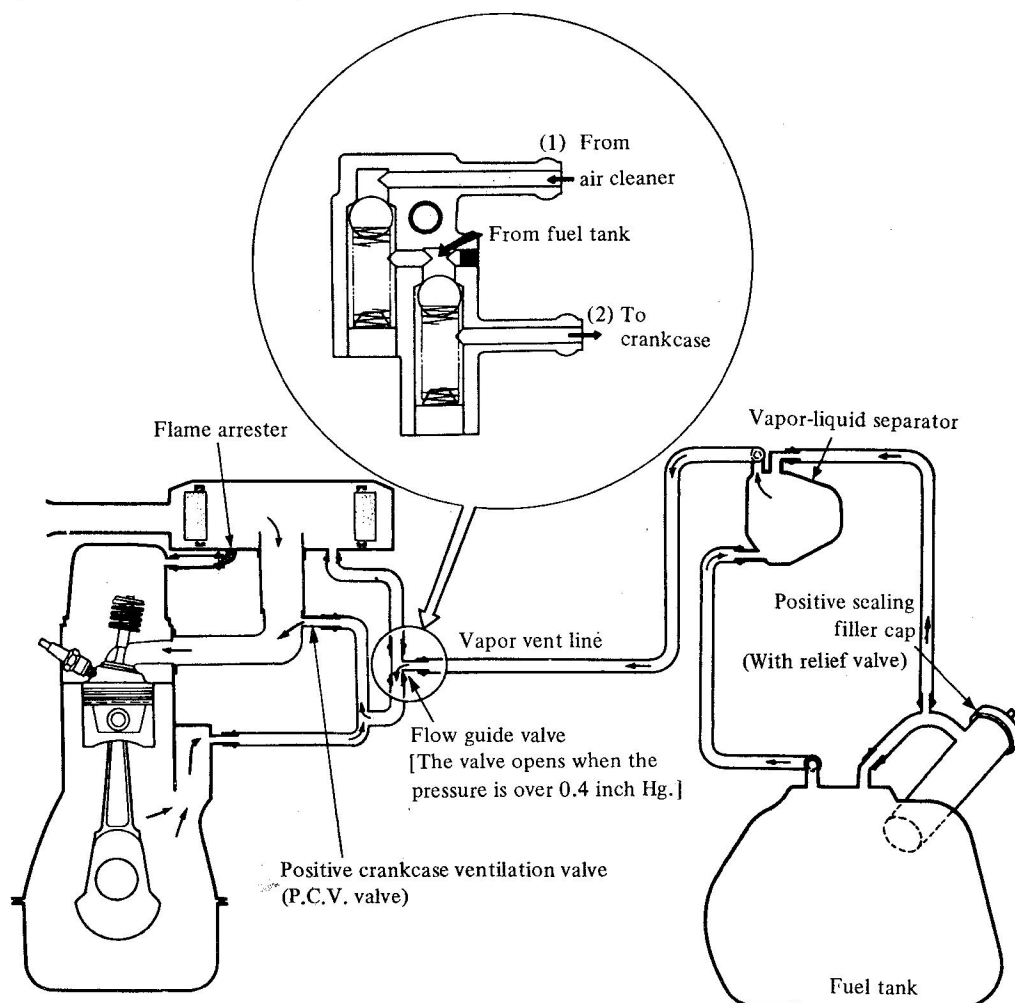
The flow guide valve prevents blow-by gas from flowing into the fuel tank and guides fresh air into it,

preventing gasoline vapor from escaping into the carburetor air cleaner.

Flow guide valve operates and blow-by gas and gasoline vapor flow as follows.

When the engine is not running, the vapor vent line, vapor liquid separator and fuel tank are filled with gasoline vapor produced in the sealed type fuel tank. A flow guide valve opens when the gas pressure is above 0.4 inch Hg. The gas passed through the flow guide

valve (2) is accumulated in the crankcase. Once the engine starts, the gas evaporating in the crankcase, is sucked into the manifold for combustion. When the pressure of the sealed type fuel tank, vapor liquid separator and vapor vent line becomes negative by decreasing the fuel, the flow guide valve (1) opens to send fresh air from the carburetor air cleaner to the fuel tank.



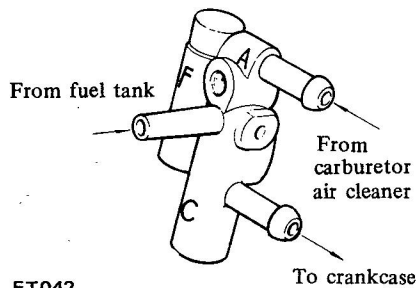
EC013

Fig. EF-40 Evaporative emission control system

FUEL SYSTEM

FLOW GUIDE VALVE

This valve is mounted in the engine compartment. Marks A, F and C are engraved in the body of the valve to indicate the connection of the vapor vent line.



ET042

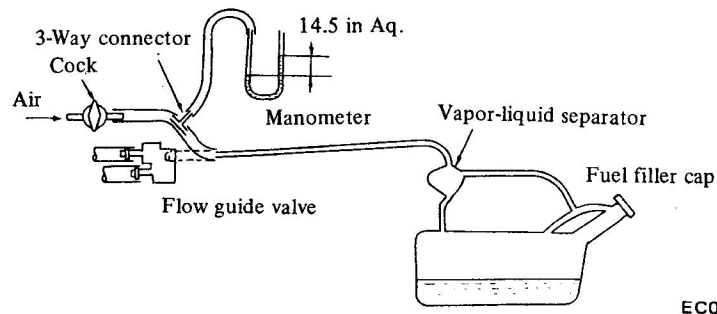
Fig. EF-41 Flow guide valve

Checking fuel tank, vapor-liquid separator and vapor vent line

1. Check all hoses and fuel tank filler cap.
2. Disconnect the vapor vent line connecting flow guide valve to vapor-liquid separator.
3. Connect a 3-way connector, a manometer and a cock (or an equivalent 3-way change cock) to the end of the vent line.
4. Supply fresh air into the vapor vent line through the cock little by little until the pressure becomes 14.5 inch Aq.
5. Shut the cock completely and leave it that way.
6. After 2.5 minutes, measure the height of the liquid in the manometer.
7. Variation of height should remain within 1.0 inch Aq.
8. When the filler cap does not close completely the height should drop to zero in a short time.
9. If the height does not drop to zero in short time when the filler cap is removed, it is the cause of the stuffy hose.

Note: In case the vent line is stuffy, the breathing in fuel tank is not thoroughly made, thus causing

insufficient delivery of fuel to engine or vapor lock. It must therefore be repaired or replaced.

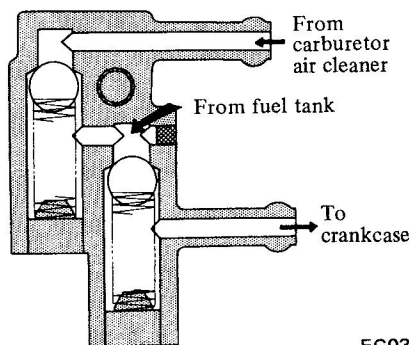


EC029

Fig. EF-42 Checking evaporative emission control system

Checking flow guide valve

1. Disconnect all hoses connected to the flow guide valve.
2. While lower pressure air is pressed into the flow guide valve from the ends of vent line of fuel tank side, the air should go through the valve and flow to crankcase side. If the air does not flow the valve should be replaced. But when the air is blown from crankcase side, it should never flow to the other two vent lines.
3. While the air is pressed into the flow guide valve from the carburetor air cleaner side, it flows to the fuel tank side and/or crankcase side.
4. This valve opens when the inner pressure is 0.4 inch Hg. In case of improper operations or breakage, replace it.



EC030

Fig. EF-43 Flow guide valve

Checking fuel tank vacuum relief valve operation

Remove fuel filler cap and see if it functions properly as follows:

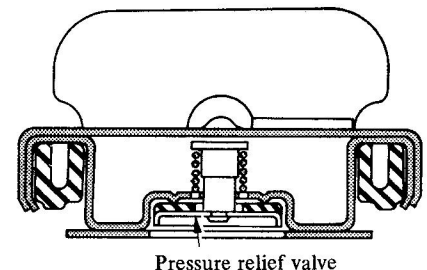


Fig. EF-44 Fuel filler cap

1. Wipe clean valve housing and have it in your month.
2. Inhaling air. A slight resistance accompanied by valve indicates that valve is in good mechanical condition. Note also that, by further inhaling air the resistance should be disappeared with valve clicks.
3. If valve seems to be clogged, or if no resistance is felt replace cap as an assembled unit.

FUEL SYSTEM

SERVICE DATA AND SPECIFICATIONS

Air cleaner

Air control valve partially opens	°C (°F)	above 37.5 (100)
Air control valve fully opens	°C (°F)	above 48 (118)
Idle compensator partially opens	°C (°F)	above 65 (149)
Idle compensator fully opens	°C (°F)	above 75 (167)

Fuel system

Fuel pressure	kg/cm ² (psi)	0.18 to 0.24 (2.56 to 3.41)
Fuel pump capacity	cc (U.S. pts.)/min at rpm	1,000 (2.11)/1,000

Carburetor

		Primary	Secondary
Outlet dia.	mm (in)	30 (1.181)	34 (1.339)
Venturi dia.	mm (in)	23 × 8 (0.906 × 0.315)	30 × 9 (1.181 × 0.354)
Main jet		#97.5	#170
Main air bleed		#65	#60
Slow jet		#48	#90
Slow air bleed		#145	#100
Slow economizer	mm (in)		1.8 (0.071)
Power jet			#53
Float level	mm (in)		23 (0.906)
Fuel pressure	kg/cm ² (psi)		0.17 (2.42)
Main nozzle		2.5 × 3.5	2.5 × 4
Inner dia. × Outer dia.	mm (in)	(0.098 × 0.138)	(0.098 × 0.157)

Adjustment

Engine idling

Manual Transmission	5°/800 rpm, retard side, CO 1.5 ± 0.5%
Automatic Transmission	5°/650 rpm, retard side, CO 1.5 ± 0.5% (in D range)

Fuel level adjustment

Gap between valve stem and float seat	mm (in)	1.5 (0.059)
---------------------------------------	---------------	-------------

FUEL SYSTEM

Fast idle adjustment (Fast idle cam, second step)

Gap between throttle valve and
carburetor body

Manual Transmission	mm (in)	0.9 to 1.0 (0.035 to 0.039)
Automatic Transmission	mm (in)	1.12 to 1.22 (0.044 to 0.048)

Vacuum break adjustment

Gap between choke valve and
carburetor body

mm (in) 1.7 (0.067)

Choke unloader adjustment

Gap between choke valve and carburetor
body

mm (in) 4.4 (0.173)

Bimetal setting

Resistance between terminal and
carburetor body [at 21°C (70°F)]

ohms 9.8 to 10.2

Bimetal setting 17° (L16) (Center of the index marks)
22° (L18) (Center of the index marks)

Interlock opening of primary and secondary

Throttle valves

mm (in) 7.4 (0.291)

Dash pot adjustment (Without loading) 1,600 to 1,800 rpm

Anti-dieseling solenoid tightening torque kg-cm (in-lb) 35 to 55 (30 to 48)

B.C.D.D. set pressure

Manual Transmission

mmHg (inHg) -500 ± 20 (-19.7 ± 0.79)

Automatic Transmission

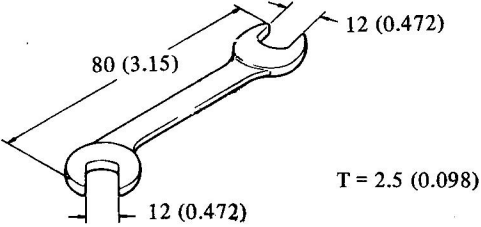
mmHg (inHg) -480 ± 20 (-18.9 ± 0.79)

B.C.D.D. tightening torque

kg-cm (in-lb) 20 to 40 (17 to 35)

FUEL SYSTEM

SPECIAL SERVICE TOOL

No.	Tool number & tool name	Description Unit: mm (in)	For use on	Reference page or figure No.
1.	ST19150000 Anti-dieseling solenoid spanner	<p data-bbox="532 516 1068 543">For installing anti-dieseling solenoid to carburetor.</p>  <p data-bbox="974 806 1117 833">T = 2.5 (0.098)</p> <p data-bbox="1130 898 1192 919">SE298</p>	L18 L16 A12	Page ET-8 Page EF-19